

Compilation of runoff reduction spreadsheet comments from design charettes.

General comments:

1. Provide calculations behind the reductions to allow designers to check their work. (DCR suggests that the explanations – i.e. “User Manual” – be provided in the SWM Handbook, with the formulas locked in the spreadsheet itself)
2. Level 2 design requirements may be too stringent – use a more fluid approach. (Relates to BMP Stds & Specs)
3. List accepted forms of pretreatment. (Relates to BMP Stds & Specs)
4. Detailed guidance on pocket wetlands is necessary. (Relates to BMP Stds & Specs)
5. This spreadsheet should only be used as an initial guideline as site-specific reductions may vary.
6. Consider structural needs of permeable pavement in specifications. (Relates to BMP Stds & Specs)
7. **How will redevelopment be addressed? (In the spreadsheet, or not? If so, how – as a separate tab and/or procedure?)**
A separate procedure using the same spreadsheet, or at least a similar one would be best, but this deserves further discussion.
8. A policy that includes preliminary review of plans by DCR would save time and money.
9. This system could result in excessive requirements for geotechnical testing.
10. Include design parameters for grass swales. (Relates to BMP Stds & Specs)
11. Is it allowable to skip Step 2 entirely and get the required phosphorous removal in Step 3? Since ponds may be required for larger storm events, skipping Step 2 will be a common action.
12. Runoff reduction volume should be required to avoid skipping Step 2.
13. Cost and maintenance issues are not addressed. Both could be significantly higher. (Relates to BMP Stds & Specs)
14. Given the high costs of implementation, nutrient banking and trading may be worthwhile.
15. Documentation of the % removal rates should be provided. (Relates to BMP Stds & Specs)
16. Specifications for design and construction of the BMPs are needed. (Relates to BMP Stds & Specs)
17. Are there “basic” and “minimum” sizing rules for the BMPs? (Relates to BMP Stds & Specs)
18. The number of spatial computations necessary may be high.
19. What will the effect on high-turf land uses be?
20. The low removal efficiencies given for bioretention do not match CWP literature. (Relates to #15 above)
21. Bioretention should be similar to filtering practices in reduction %. (Relates to #15 above)
22. There may be significant issues regarding the difference between storm event Rv and annual Rv, particularly for quantity control and larger storm events. (?)
23. The RR measures should be integrated with rate control of larger storm events.
24. CN changes should be used to apply the RR values to larger storm events.

25. Grandfathering of projects in the design-phase once these rules are adopted should be considered. (Regulation language issue? – typically projects are not grandfathered unless they already have had plans approved and have received a permit?)
26. **Linear construction projects may have difficulty meeting the criteria.**
27. Protected open space is difficult to enforce. (Relates to BMP Stds & Specs – maintenance design/policy issue?)
28. **Local code conflicts with LID practices will need to be addressed.**
29. Maintenance and inspection costs for municipalities will be higher.
30. How does this relate to 16% land cover and compliance based on lot size?
31. Could volume reduction be incentive-ized by connecting it to MS-19?
32. It is misleading to focus on the runoff reduction without addressing the volume and space required to provide rate control for larger storm events. (Relates to #'s 22, 23, and 24 regarding melding water quantity control volumes with water quality control volumes)
33. High groundwater sites will be a problem.
34. The “black box” nature of the spreadsheet could lead to a lack of understanding among designers and reviewers. (See #1 above)
35. More information on construction and maintenance is necessary.
36. LEED uses TSS instead of P as the target pollutant. It would make sense for VA to do the same.
37. Issues not specifically addressed by the spreadsheet may not receive adequate consideration. (?)
38. A user’s manual should be provided with the spreadsheet. (See #1 above)
39. A minimum threshold for use of the spreadsheet should be defined. (?)
40. Some measures in the spreadsheet are not well-accepted in the industry. (Relates to BMP Stds & Specs)
41. Maintenance of numerous dispersed measures may be an issue. (Maintenance will be addressed and explained separately in the SWM Handbook)

Spreadsheet-specific comments

1. Explain how to classify land types in Step 1 for BMPs (green roofs, etc). (We should not need to – this person wanted to know what land cover type should be assigned to each chosen BMP for the purposes of calculating the composite runoff coefficient; he didn’t seem to understand that the composite r_v is calculated first, to generate the total treatment volume, then the chosen BMPs are applied to reduce that volume – they don’t have a land cover type associated with them!)

I think this point is somewhat valid. Certain BMPs use a significant portion of the site area (bioretention or constructed wetlands), and will affect the site runoff calculations. In addition, we need to avoid the idea of designing the site first, and throwing the BMPs in later; BMPs need to be considered from the very beginning. This comment only affects a few BMPs. For many of them, the classification is obvious - green roofs and porous pavement should be counted as impervious, for example, but an acre of stormwater wetland or an extended detention are a little bit harder to categorize in terms of land cover .

2. Add RR rates for cisterns that include water re-use. (Relates to BMP Stds & Specs)
3. Add RR rates for underground detention. (Relates to BMP Stds & Specs)
4. Provide flexibility in design volumes to allow designers to create site-specific designs and get credit for utilizing BMPs that are better than the minimum standards. (?)
5. Use green text for note stating that the goal is met, and red for the unmet goal.
6. Consider partial exfiltration designs for permeable pavement. (Relates to BMP Stds & Specs)
7. Consider having the areas in Step 1 be automatic calculations based upon the area inputs in Step 2 (at least on a final summary page).
8. Avoid double-counting for % removal. (Specific to BMPs in treatment trains)
9. Change “Rooftop Disconnect” to “Impervious Disconnect.”
10. Load reduction units should be specified.
11. The summary table should be shown at the top of the sheet.
Nitrogen is not addressed. (Nitrogen is to be added to the spreadsheet as a *background* load reduction calculation – that is, each BMP has a nitrogen reduction values for runoff reduction, treatment, and the combination; so as TP reductions are tallied for the chosen BMPs, TN reductions can also be tallied)
12. 0.26 should be used for TP EMC instead of 0.28 (**NOT** unless DCR’s regulatory TAC agreed to such a change, which would be MORE stringent – the 0.28 standard is directly related to the Chesapeake Bay Tributary Strategy nutrient reduction goals for Virginia’s developing lands)
13. Why was 2.67 chosen for TN EMC? (This is explained both in an Appendix of the CWP’s original support document created for DCR, as well as in an Appendix of the CWP’s Technical Memo explaining and supporting the Runoff Reduction Method)
14. Provide separate sheets for different drainage areas.
15. Dry swales need to be separate from bioretention to allow for better sequencing. (Relates to BMP Stds & Specs)
16. Open space incentives should be improved. (Relates to BMP Stds & Specs?)
17. A separate spreadsheet should be created for BMP design as this spreadsheet is more of a compliance tool. (?)
18. Use of off-site measures is not addressed. (These would have to be calculated separately for the off-site area to be treated and, presumably, the reductions achieved at the original and alternate sites would be added together to demonstrate compliance – **could there be a separate tab for an off-site mitigation area, just as there will be for separate drainage areas?**)
A separate tab would not be needed – the off-site area could just be considered a separate drainage area in the spreadsheet.
19. **Proprietary (manufactured) BMPs are not included in the spreadsheet.** (These could be added as they are approved by the Stormwater BMP Clearinghouse Committee and DCR for use in Virginia, subject to specifically approved levels of performance)
20. The pollutant removal required was not clear in each step. (?)

Proposed revisions for beta version of runoff reduction spreadsheet

1. Separate tabs will be created for separate drainage areas **(and for off-site mitigation areas?)**.
The spreadsheet currently contains tabs (D.A. A and D.A. B) for two separate drainage areas. More can be created once all other changes are made.
2. Allow sequencing of BMPs to ~~allow~~ **avoid** double counting. **(DCR understands that the CWP has already worked out beta version algorithms that provide a level of adjusted/reduced performance for BMPs in sequence)**
Addressed.
3. Eliminate forested area contribution to P totals **(What comment does this refer to, and what does it mean?)**
This refers to spreadsheet specific comment number 17 and discussion with Dave Hirschman. We agreed that forested area should not be considered to contribute phosphorous to the site. This will encourage preservation and reforestation. This has been done by setting the Rv for forested areas equal to 0. Further discussion is necessary on this topic.
4. ~~Change P load to 0.26~~ **(See the note associated with comment #13 in the “Spreadsheet Specific Comments”)**
0.26 would be more stringent for P Load, but not for TP EMC. TP EMC, the estimated loading from developed sites has been reduced to 0.26 mg/L per Dave Hirschman’s recommendation.
5. Address how runoff reduction will affect **channel protection (and flood control?)** requirements, including the energy balance approach
Addressed.
6. Change titles to match tech. memo.
Addressed.
7. Change “Rooftop Disconnect” to “Impervious Disconnect.” **(? – we should check with Tom Schueler before changing this)**
Addressed. Further discussion may be necessary.
8. Create separate categories for dry swales and bioretention. **(? – we should check with Tom Schueler before changing this)**
Addressed. Further discussion may be necessary.
9. Show summary table at top of sheet.
Addressed.
10. **Add Total Nitrogen reduction calculations to the spreadsheet as well, even though TN is not used for compliance purposes**
Addressed. The nitrogen calculations are shown below the phosphorous calculations. We may want to consider putting the nitrogen calculations on a separate tab instead.
11. **Referring to “Spreadsheet Specific Comment” #5, use green text for the note stating that the goal is met (i.e., you’re “good to go”), and red for the unmet goal (i.e., “stop, you’re not finished yet!”).**
Addressed.
12. **Show an interim progress tally between Step 2 (RR) and Step 3 (Treatment), showing how much of the goal has been met and how much still must be met.**
Addressed.

Other revisions and comments:

The beta version of the spreadsheet has been revised

In calculating the flood control values, I estimated the 10-year storm volume to be 4.8 inches. This needs to be verified. The nitrogen EMC and load values on the Site Data tab also need to be verified.

The tabs for D.A. A and D.A. B contain many calculation boxes to the right and below the main body of the spreadsheet. The boxes to the right are used to tally volumes in the treatment train sequence. The boxes at the bottom are the lists of BMPs used in column K. These will all be hidden from the user once the spreadsheet is complete.